Project acronym: blueJUNPIN

Project title: Blue rings formation in trees and shrubs as a record of past summer cooling events in northern Scandinavia

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Discipline: Earth Sciences & Environment: Global change & Climate observation

Station(s): Värriö Subarctic Research Station (Finland)

Trees have been recognized as a valuable source of information on past regional to hemispheric summer cooling events. Shrubs also grow in the North, but they are less studied than trees in the context of summer cooling events potentially associated with large volcanic eruptions. Comparison studies of trees and shrubs growing in close proximity have rarely been conducted at northern latitudes, and have the potential to detail our understanding of past summer cooling events.
Very recently, blue rings (BRs) have been recognized in trees as one of the potential indicators of extreme climatic events. BRs are tree rings with layers of cells with incompletely lignified cell walls that appear blue after double-staining procedure of wood sections. BRs were found recently in Pinus sylvestris trees in northern Finland. Also, we have just discovered BRs in Juniperus shrubs collected in northern Sweden.
In the Värriö area (4-12/08/2023), we aimed to sample pine trees and juniper shrubs mainly from an alpine treeline i.e., around Station (Ykkonen). We took 98 cores and 63 discs from living and dead trees and shrubs, respectively. If possible, we will also sample dead specimens of trees and shrubs. Thus, we will trace past cooling events using BRs formation in trees and shrubs at a long time scale (ca. 300 yrs) and compare them between other study sites in northern Scandinavia. A spatial comparison of BRs formation will help us to understand if severe cooling events were present at local or pan-regional scales across northern Scandinavia.